



सत्यमेव जयते

GOVERNMENT OF INDIA
MINISTRY OF TOURISM AND CIVIL AVIATION
(COMMISSION OF RAILWAY SAFETY)

RAILWAY ACCIDENT INVESTIGATION
REPORT



On

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the rear-end collision
between
EC 281 Down Goods Train
and
C 166 Down Burdwan Local (EMU) Train
at
GANGPUR STATION,
Eastern Railway
on
18th August, 1968.

C O R R I G E N D U M

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SUMMARY

1. Date 18th August 1968.
2. Time 07.05 hours.
3. Railway Eastern Railway.
4. Gauge 5'—6".
5. Location Between the Dn. H. B. C. Distant and Home Signals of Gangpur Station.
6. Nature of Accident Rear-end collision.
7. Trains involved EC. 281 Down Goods train.
C. 166 Down Burdwan Local (EMU).
8. Consisting of EC. 281 Down : 52 4-wheeler wagons, 6 Boxes and 14 wheeler Brake-Van-59/65, hauled by Electric Engine No. 20281 WAM-1
C. 166 Down : 6-coach train consisted of 2 EMUs i. e. two 3-coach sets.
9. Approximate speed at Impact EC. 281 Down : Stationary.
C. 166 Down : 35 m/h.
10. System of Operation Absolute Block System with Double Line Block Instruments.
11. Number of Tracks 4
12. Gradient 1 in 1000 falling.
13. Alignment 15280' radius right hand curve.
14. Weather Cloudy with occasional drizzle.
15. Visibility Clear.
16. Casualties 7 dead and 7 injured- 1 grievous and 6 minor.
17. Cause C. 166 Down Burdwan Local train being driven at excessive speed and without great caution and requisite care in contravention of the provisions in General Rules Nos. 89(b), 122, 163(a) (i) & printed instructions at the back of OPT/126A which was issued to the Motorman.
18. Person held responsible (i) Motorman of C. 166 Down Burdwan Local.
(ii) Guard of C. 166 Down Burdwan Local.

G. S. PANDOR

GOVERNMENT OF INDIA
MINISTRY OF TOURISM AND CIVIL AVIATION
(COMMISSION OF RAILWAY SAFETY)

No. 1174 /MAG-47

Dated 23/7/1969.

From : The Additional Commissioner of Railway Safety, North Eastern Circle, 6, Esplanade East, Calcutta-1.

To : The Secretary to the Government of India, Ministry of Tourism & Civil Aviation New Delhi.

Through : The Commissioner of Railway Safety, Lucknow.

Sir,

In accordance with Rule 10 of Railway Board's Notification No. 59-TTV/42/1 of 11th April, 1966, I have the honour to report the results of my inquiry into the collision between EC. 281 Down Goods train and C. 166 Down Burdwan Local (EMU) on the Down H. B. C. Line at Kml. 101/4-6 between the Down Distant and the Down Home Signals of Gangpur Station on the, Quadruple Section of Howrah-Burdwan Main Line Electrified Section of the Eastern Railway at about 07.05 hours on 18th August, 1968.

2. **Inspection and Inquiry.**—(a) Arriving Burdwan on the morning of 20th August, I proceeded to the site of the accident by Push Trolley where, in company with the Transportation Superintendent (Safety), Divisional Superintendent, Howrah and other concerned Divisional Officers, the remnants of the last 3 Goods vehicles that were involved in the accident and had been lying alongside the bank were inspected. The damage sustained by the front coach of C. 166 Down was, however, surveyed in Burdwan Yard where it had been berthed in a siding. Later in the evening the 3 patients who had been admitted into the Civil Hospital, Burdwan, were visited by me. Except one whose condition was still serious, the other two persons were progressing satisfactorily. On 21st instant, Unit No. 41 of C. 166 Down Burdwan Local train was tested to ascertain the functioning of the speedometer in the Guard's cab. The unit when driven between Gangpur Down Home Signal and Burdwan at a restricted speed of 10 to 12 miles per hour took nearly 20 minutes to cover the distance. Visibility and braking tests were, however, conducted on 23rd.

(b) A Press Notification was issued on 19th August inviting public who had information on the accident to appear at the inquiry which I commenced on 21st August and continued upto 23rd August at Burdwan or to communicate with me by post.

The Civil and Police authorities including the Government Railway Police were duly notified. The Officers present at the inquiry were:

- (i) Shri R. Jagannathan, Transportation Superintendent (Safety), Calcutta;
- (ii) Shri S. C. Uppal, Divisional Superintendent, Howrah;
- (iii) Shri H. C. Johari, Deputy Divisional Superintendent, Howrah;
- (iv) Shri S. Guha, Sub-Divisional Officer, Burdwan Sadar (on 21st forenoon);
- (v) Shri B. B. Chatterjee, Officer-in-Charge, Government Railway Police, Burdwan;
- (vi) Shri G. Bhowmick, Inspector of Railway Police, Bandel.

Other Divisional Officers were called in as required.

The evidence of 26 witnesses was recorded and relevant exhibits filed.

NOTE : The terms 'Right' & 'Left' and 'Front' & 'Rear' where used in respect of each train, are in reference to its direction of travel.

The abbreviation 'C. 166' is used for C. 166 Down Burdwan Local.

The abbreviation 'TS' is used for Track Structure Post.

The abbreviation 'EMU' is used for Electric Multiple Unit which in this case comprised of six coaches.

The abbreviation 'EC. 281' is used for EC. 281 Down Goods train (Electric).

3. The Accident.—Shortly after midnight at 00.20 hours on 18th August, there was total failure of communications on the Block Section, 6.91 Km. long, between Burdwan and Gangpur, the former an important Suburban terminal station on the Quadruple Main Line Section of the Eastern Railway between Howrah and Asansol. Later it was confirmed that this was due to theft of underground cable. In the circumstances, finding no other alternative, Burdwan Station Master took the right decision to pass all Down trains in accordance with the Rules and Regulations framed by the Railway Administration for running of trains on Double Line Sections during total interruption of communications. Under these Regulations, all trains were served with Caution Orders to observe speed restriction of 15 Km/h over the straight and 5 Km/h over any portion of line where the view ahead was not clear due to curve, obstruction, rain, fog or any other cause. The Rules enjoin upon the driver to bring his train to a stand outside the first Stop Signal and sound four long whistles.

Electric C. 281 Down Goods, 12th to enter the Block Section by the Down H.B.C. line under the circumstances and precede C. 166 Down, left Burdwan at 06.39 hours on proper authority. Approaching Gangpur, the Driver, who passed the Distant Signal at green, stopped at the Home signal which displayed caution aspect and sounded 4 long whistles in compliance with the Rules. Not being certain whether the reception signals which had been taken off in advance, applied to his train, the Driver sent his assistant to the station to ascertain the correct position. The train had hardly waited for about 5 minutes when C. 166 Down Burdwan Local, a six-coach EMU train comprising units 41 and 49 which had entered the Block Section at 06.59 hours on proper authority, came from the rear and collided with it at 07.05 hours in cloudy weather with occasional drizzle and clear visibility at a point 1000 ft. ahead of the Down Distant Signal. The speed at impact was 35 m/h. Both trains after the accident were standing on a 15280' radius right hand curve.

As a result of the accident :

- (i) The shock of the impact was great owing to the fact that the Local train was driven at high speed and it moved forward for a distance of about 94' after the collision. The underframe of the leading coach of the Local train was forced underneath that of the brake-van of the Goods train for a distance of 15', bending down the underframe sole bars, the sag being about a foot at the fore-end. The trailing derailed pairs of wheels of the latter were pushed forward breaking the axle guards and the brake-van telescoped into the coach for about this distance. The Motor-man's cab with its driving equipment and the front half portion of the leading IIIrd Class compartment immediately in rear of it were completely wrecked. The roof of the coach on being ripped off was pushed up, which coming in contact with the overhead conductors caused current to cut off when circuit breakers tripped on earth-fault. The wagon next to the brake-van, loaded with buffaloes, over-rode the latter's under-frame with all wheels except the left leading which having come off from the axle guard rested on the formation. The axle-box of the right leading wheel had come off its groove but had not completely slipped off the axle guard. The wagon next to the first, also loaded with buffaloes, with both pair of its wheels dislodged, rode over the first wagon smashing its body completely except for the rear end panel. The front pair of wheels were on rails. Rear end of the second wagon was partially damaged. The sheared body of the brakevan had entangled with the roof of the leading coach of C. 166 Down.
- (ii) The breakage of upset end of the plain portion of the screw of the transition coupling of the 28th box wagon from its spindle caused the Goods train to part between the 27th and 28th vehicles and the two portion stood with a clear gap of 42'—5". The clevice and the hook remained intact in the Central Buffer Coupling. The hooking portion of the screw coupling remained banging on the draw bar hook of the 27th wagon.
- (iii) All coaches of C. 166 Down and all other vehicles of the Goods train except the rear 3 were intact on rails.

4. Casualties—5 persons were killed outright (including the Motorman of C. 166 Down) and 2 more died subsequently in the hospital. 7 others sustained injuries which include 3 Cattle-Attendants travelling in the last two wagons ahead of the brake-van. Of these, 1 was classified as grievous and the rest as minor.

II. RELIEF MEASURES

5. **Intimation**—The Control at Howrah received intimation of the accident from Gangpur Station through the Traction Power Controller's circuit in 20 minutes of its occurrence and besides alerting all concerned, emergency services were called immediately.

The Signal and Interlocking Maintainer (Electrical), who was attending to telephones at Gangpur, on getting the news of the accident went to Burdwan by road and informed the Station Master at 08.10 hours. The latter took prompt action in advising the Civil and Police authorities and arranging despatch of Medical aid by road and the Relief train.

6. **Assistance at site.**—(a) The Guard of the Goods train and that of M 131 Up EMU Local train which was held at Gangpur for power failure rendered First Aid at site before the arrival of medical aid from Burdwan.

(b) Two Railway Doctors accompanied by hospital staff and other Railway Local Officers left Burdwan by road and reached the site at 09.16 hours. An ambulance sent by Burdwan Civil Hospital had just preceded them. 5 of the 6 injured persons, after First Aid, were transported by the ambulance and a Police van and admitted into Burdwan Civil Hospital at 09.42 hours and the last person at 13.55 hours as it took time to rescue him from the telescoped cattle wagon which required gas and chiesel cutting.

(c) Bamangachi Scale 'A' Medical Van though despatched promptly did not reach the site until 12.55 hours as it developed hot axle on the run which delayed its movement on account of constant repacking and slowing down of speed.

7. **Restoration of lines.**—(a) At 14.25 hours on getting clearance from the Police authorities, Relief trains commenced operations of separating the telescoped wagons from the 1st coach of the EMU train on which they were resting. The clearance of the last 3 vehicles of the Goods train involved in the accident was only possible by working crane from the Down Main Line. After dealing with important trains, it was blocked for crane working at 21.05 hours when 30-ton Howrah crane went into action and cleared the Down H.B.C. of the obstruction by 05.05 hours on 19th morning. After repairs, it was made over to traffic at 05.35 hours when normal operation was resumed.

(b) Some of the stranded passengers of the colliding train had availed M. 131 Up local train which was terminated at Gangpur and worked back to Howrah as a Passenger Special, while others used road transport plying on the Grand Trunk Road running parallel to the Railway line and not far from the station.

III. THE TRAINS

8. **Composition of the Trains.**—(a) C. 166 Down Burdwan Local :—

- (i) The 6-coach train consisted of 2 EMUs i.e. two 3-coach sets. The middle coach of each EMU was motored. The length of the train was 422 ft. and it weighed 302 tons. It was fully air-braked.
- (ii) The exterior body shell is of all steel construction welded to sole bars and formed an intergal part. The flooring consisted of 'Ferrobestos' sheet laid on steel through flooring, the troughing corrugations being filled up with bitumastic compound. The seats and back were of compressed plywood. The side-walling consisted of 1/8" 'Haylam' sheets. Aluminium doors with louvres were sliding double acting type.
- (iii) The composition of 12' wide EMUs manufactured by Messrs Jessop & Co. Ltd., and their carrying capacity were as under:

Unit No.	Coach No. & Type.	Seating Capacity.
49	9049—Driving Trailer Coach 'A'—IIIrd Class	102
	9249—Motor Coach 'B'—IIIrd Class, DC HT Compartment and Emergency Driving cab	100
	9449—Driving Trailer Coach 'C'—IIIrd Class, Vendor's and AC HT Compartment	75
41	9041—Driving Trailer Coach 'A'—IIIrd Class and 1st Class	102
	9241—Motor Coach 'B'—IIIrd Class, DC HT Compartment and Emergency Driving cab	100
	9441—Driving Trailer Coach 'C'—IIIrd Class, Vendors' and AC HT Compartment	75
	TOTAL	554

The number of passengers on the train at the time of accident was about 150.

(iv) The braking system was of Electro-pneumatic type for normal application of brakes. In case of its failure, Automatic braking system operated. The brake controller could operate from 3 positions viz. (a) Electro-pneumatic (EP), (b) Automatic and (c) Emergency. When on emergency position, both the Electro-pneumatic and Automatic application of brakes are brought into play.

(v) *The coach No. 9049.* Besides the driving cab in the front, the coach had three IIIrd class compartment, the middle one having seating accommodation of 50 whereas each of the end ones 26.

(b) *E. C. 281 Down Foods train.* (i) Engine No. 20281 AC, 25 KV single phase, WAM-1 type; built by European Group in 1959; in service since 1960; Gross weight-74.0 tonnes; length over buffers-15.932 metres (50'-2"); fitted with 'Hastler' Speed Indicator and Speed Recorder, both in working order but without chart.

(ii) Load : 52 Nos. 4-wheeler wagons
6 Nos. Boxes

1 No. 4- wheeler Brake-Van.

Total : 59/65

(iii) The total length of the train over buffers including the engine was 1738'-10" and it weighed 2000.5 Tons. The train, which was braked throughout, had 52 active vacuum cylinders out of 65 and the brake power based on accepted data was 551.50 Tons.

9. **Derailment and Damage.** (a) *Train No. C. 166 Down Burdwan Local.*—(i) Except for the leading end of the first coach No. 9049, which suffered severed damage all others were unaffected. None of them derailed.

(ii) *Coach No. 9049 Driving Trailer :* The brake-van of the Goods train together with the next 2 wagons one above the other riding on top of it had telescoped into the front of the coach to a depth of 15 ft., wrecking completely the coach body up to this extent. The front of the driving cab with driving and other gadgets and the partition wall separating it from the IIIrd Class Compartment were pushed inward, damaging completely the seats in the leading half portion of the IIIrd Class Compartment. The torn roof was pushed up which on touching the overhead traction wires caused circuit-breakers to trip. The sole bars had bent down, the maximum sag being 1'-0" at the fore-end. Both conventional type front buffers held, but the one on the left was, however, loose as it was held by one bolt only. The cowcatcher had suffered very superficial damage as it was bent slightly inward.

(b) *C. 281 Down Goods train.* (i) *Brake-van No. 2610 E. R.* :—The impact forced the underframe of the first coach of C. 166 Down underneath that of the brake-van, the buffers of the former touching the rear end of the laminated spring over the front axle boxes, causing the latter to telescope into the front of the coach body. The rear pair of wheels which had come off the broken axle guards were pushed forward and rested on formation between the cowcatcher of the Local train and the leading pair of wheels of the brake-van which were intact but derailed. The fore-end buffers were almost grazing the formation. The brake-van underframe laid at an angle of approximate 350° with the track. The telescoping into it of the first wagon next to it wrecked its body completely and damaged the wooden floor extensively.

(ii) *Wagon No. 7280 S.R.* The wagon was loaded with buffaloes. It was found resting on the brake-van floor with all wheels excepting the left leading dislodged from the axle guards was resting on formation. Although the right leading wheel axle box had come off its groove but it was still held between the axle guards. While the right leading end buffer was loosely held in position by one bolt, all others had fallen off. The front end screw coupling was broken. Most of the wooden flooring and the body were destroyed by the second wagon which over-rode it.

(iii) *Wagon No. 34161 S.R.* :—The wagon, also loaded with buffaloes, telescoped into the first wagon and was found resting on top of the latter with both pair of wheels detached. The front end was supported partially on the debris and partially on the front pair of wheels which were pushed forward on rails. The inclination of the front end pushed the rear end panel of the third wagon inward by about a foot, and thus sustained minor damage.

(iv) The damage has been estimated to be Rs. 1,82,000.

	Rs.
EMU Coach	1,50,000
Goods Rolling Stock	30,000
Permanent Way	2,000
	1,82,000

IV. LOCAL CONDITIONS

10. (a) The kilometrage, reckoned from Howrah, of various stations referred to in this report are as below, there being 15 structure posts per kilometre :—

Howrah	0 Km.
Bandel	39.29 Km.
Saktigarh	95.20 Km.
Gangpur	99.82 Km.
Site of accident	101/4-6 T.S.
Burdwan	106.73 Km.
Asansol	212.12 Km.

The general direction of the quadruple lines, equipped with 25 A.C. traction between Burdwan and Gangpur (Down direction), is south-easterly. The site where the accident occurred is on the Burdwan—Gangpur Block Section between the Down Distant and the Down Home Signals of Gangpur Station which is not directly accessible by road. A mile of kutchra road, leading to a private Brick-field taking off the Grand Trunk Road short of Gangpur Station, was made use of to reach the scene of accident as it was hardly $\frac{1}{4}$ mile's walk from there. The distance of the Civil Hospital, Burdwan, from the site of the accident is about 6.5 Kms.

(b) Facing Howrah, the Quadruple lines from left to right are the Down Main, Down H.B. Chord, Up Main and Up H.B. Chord laid at not less than 15'—4" centre to centre. The lines generally consist of 90 lbs. RBS panel rails, each 210' in length laid on CST/9 sleepers with wooden sleepers at joints to density N+6 on stone ballast at 12 to 15 cft. per foot run.

There were no permanent and temporary speed restrictions on any line between Burdwan and Gangpur.

(c) The distances from Gangpur Down Distant Signal of the Down H.B.C. line relevant in this case are :

(i) Commencement of 15280' radius left hand curve	9506' (in rear)
(ii) End of above curve (i)	101' („)
(iii) Commencement of another 15280' radius right hand curve	329'
(iv) Tail end of C. 166 Down after collision	729'
(v) Probable point of collision	1068'
(vi) Rear of EC. 281 Down Goods after collision	1162'
(vii) Front of EC. 281 Down after collision	2785'
(viii) Down Home Signal	2875'
(ix) End of 15280' radius right hand curve	6400'

(d) From 397' in rear upto the 803' in advance of Gangpur Down Distant Signal of H.B. C. line, the grade is 1 in 1004 falling towards the station, followed by 1 in 1000 falling for 2,400', 1 in 1100 rising for 300', 1 in 800 falling for 980' terminating at the end of Up platform. The accident took place on a falling gradient of 1 in 1,000 and on a 15,280' radius right-hand curve.

11. **The Signalling.** (a) Gangpur Station is equipped with Multi Aspect Colour Light Signalling for 'B' Class working. Trains are worked on the Absolute Block System with Double Line Block instruments with locks. No crossing facilities exist at the Station.

(b) The signals are operated by the Station Master from a panel which repeats signal aspects.

(c) Aspect of the Distant Signal is controlled automatically by the aspect of the relevant Home. The aspect control of signals are as under:

<i>Distant</i>	<i>Home</i>	<i>Starter</i>
(a) Yellow	Red	..
(b) Green	Yellow	Red
(c) Green	Green	Green

The Home signal is replaced to 'ON' after the train has operated the treadle /track circuit located 600' in advance of it where the Block Section ends. Similarly the Starter Signal is automatically replaced to 'ON' position when the treadle ahead of it is operated by a train.

12. **Rules and Regulations which are relevant in this case are :** In accordance with the provisions of G. R. No. 165, the Railway Administration have framed the following rules for running of trains on double line sections during total interruption of communications.

(a) *Rule No. 34 of Chapter III of Block Working Manual of the Eastern Railway.*—Rules and regulations for running of trains on double line sections during total interruption of communications.

(1) In the event of total interruption of communications occurring between two Stations on as Double Line Section i.e., "permission to approach" cannot be obtained by any one of the following means, viz.—

- (a) Block Instruments;
- (b) Telephones attached to the Block Instruments;
- (c) Control ;
- (d) Morse Telegraph Instruments;

the following procedure shall be adopted for train passing :—

(2) Before any train is allowed to enter a Block Section in advance, it shall be brought to a stand and the Driver and Guard of the train shall be advised of the circumstances by the Station Master.

(3) The Station Master shall give the Driver of each train :

- (a) an "authority to proceed with line clear" on revised Form ER-OP/T126A as the case may be. The counterfoil shall be retained by the Station Master and the foil given to the Driver ;
- (b) a caution order on Form ER-OP/T80 restricting the speed to 25 Km. per hour over the straight and to 8 Km. per hour when approaching or passing any portion of the line where the view ahead is not clear due to curve, obstruction, rain, fog, or any other cause;
- (c) an authority on Form ER-OP/T27 to pass the last stop signal in 'ON' position.

(4) In the event of a Driver approaching or passing any portion of the line where the view ahead is not clear, a Railway employee with hand signals must be sent in advance to guide the further movement of the train. A sharp look out ahead should be kept and the engine whistle freely used.

(5) No train shall be allowed to enter the Block Section until there is a clear interval of 15 minutes between the train about to leave and the train which has immediately preceded unless a smaller interval has been prescribed under special instructions.

(6) Fixed signals with the exception of the last stop signal may be taken 'OFF' for the reception and departure of trains. First stop signal shall, however, be taken 'OFF' only after the train has been brought to a stand outside it.

(7) A tunnel should be entered only after it has been ascertained that it is clear. If there is any doubt on this point, the train should be piloted by a railway employee equipped with hand signals and detonators.

(8) The Guard shall keep a sharp look-out in the rear and be prepared to exhibit a danger signal to prevent the approach of a train from the rear and to protect it, if necessary as per General and Subsidiary Rules 166. Before entering a section where there are tunnels, he shall also light the side and tail lamps.

(9) When approaching the station ahead, the Driver must bring his train to a stand outside the first stop signal and sound four long whistles. If no one from the station turns up within 10 minutes, he may send his Fireman immediately to the station or the cabin to inform the Station Master or Cabinman of the fact that the train is waiting at the signal and to arrange for its admission into the Station.

(10) The Drivers of all trains shall make over the "Authority to proceed with line clear" to the Station Master of the Station at the end of the affected section. These shall be kept by the Station Master in his personal custody for inspection by the Transportation Inspector (Movement) of the section, who shall prepare a report on the working of trains and shall forward the same along with his report to the Divisional Superintendent, within 7 days of resumption of communication.

(11) A record of all trains passed over the Block Section on "Authority to proceed without-line clear" during the course of total interruption of communications, shall be maintained in the Train Register Books at both the Stations concerned.

(12) Trains must continue to work on this system until any one of the means of communications, mentioned in rule (1) above, is restored by the competent authority.

(b) *Printed Important Instructions on the back of OPT/126A issued to the Motorman of C/166 Down.* Drivers proceeding on this authority must observe the following precautions:—

- (i) The speed must not exceed 10 kilometres per hour on single line section and 15 kilometres per hour on Double Line Sections during day when visibility is clear.
- (ii) The speed must not exceed 5 Kilometres per hour during night or when visibility is not good.
- (iii) In thick or foggy or tempestuous weather or in dust storm, the driver must go at walking pace whistling repeatedly preceded at an adequate distance by two men on foot, one displaying a red light and the other carrying fog signal ready for immediate use.
- (iv) Both by day and by night, a tunnel must not be entered until the driver has ascertained that it is clear. Should there be any doubt on this point, the train should be piloted by a railway employee, equipped with hand signals and detonators.
- (v) During night if the engine is not fitted with electric head light or if the electric head light is not in working order, the train or the light engine must be preceded at an adequate distance, by a railway servant carrying detonators and exhibiting a red light ahead to stop any other approaching train.

- (vi) A sharp look-out must be kept at all times and the driver must be prepared to stop clear and short of any obstruction which may exist or crop up on the road.
- (vii) When approaching the Station ahead, the driver must bring his train to a stand outside the first stop signal and sound three short whistles (or any other code prescribed by special instructions). If no one turns up from the Station within 10 minutes he may send his fireman immediately to the Station or the cabin to inform the Station Master or Cabinman of the arrival of the train.

NOTE.—In accordance with the instructions contained in the Block Working Manual, on a Double line section the speed must not exceed 15 m/h/25 Km/h when view is clear and 5 m/h/8 Km/h when view ahead is not clear, whereas the printed instructions on the back of OPT 126A, as in use, restrict the speed to 15 Km/h when view ahead is clear and 5 Km/h when view is not clear. The Caution Order issued to the Motorman of C. 166 Down showed the speed as printed on the OPT 126A.

V. SUMMARY OF EVIDENCE

13. **Driver Lalta Prasad of E. C. 281 Down Goods train** took over charge of the train on 18-8-68 at Burdwan after having 31 hours home station rest. Before leaving Burdwan at 06.30 hours, he was made aware of total failure of communications by serving him with requisite OPTs required under the Rules which authorised him to proceed without line clear, pass the last stop signal at 'ON' and enjoined upon him to observe speed restriction of 15 Km/h on straight and 5 Km/h where view ahead was restricted. Approaching Gangpur, he observed that the Reception signals had already been taken 'OFF' in advance. In compliance with the Rule he pulled up his train at the Home signal which is the first stop signal of Gangpur Station and sounded four long whistles to attract the attention of the Assistant Station Master. Waiting for about 3 minutes he sent his Assistant Driver to the Station to ascertain whether the Reception signals were for his train. After about 4 minutes detention at the Home signal, D. J. indication appeared on the panel in his cab as traction current was cut-off. He tried to reclose the circuit by operating the appropriate switch but it did not hold. Soon after, he felt a bump from the rear which pushed his engine forward by about 30 ft. with a severe jerk. He was appraised of the collision by the Guard of his train who came running to him as he was about to go to the rear to ascertain the cause.

To questions he replied: The time of collision as noted by him was 07.05 hours; the approach signals of Gangpur were clearly visible; although it was a cloudy day with light drizzle but the visibility was clear.

14. **Guard Biswanath of E. C. 281 Down Goods train** stated that the train left Burdwan at 06.30 hours after observing necessary formalities for entering Block Section during total interruption of communications. Approaching Gangpur, he observed that the Approach signals had already been taken 'OFF' and that the Driver pulled up the train at the Home and sounded four long whistles. On hearing the Driver whistling he came out of the brake-van to see as to why he was not proceeding when signals have been cleared for the train. In the meantime, he heard the sound of an approaching train which at first he thought was coming on the adjoining Down Main Line but soon it became apparent to him, when it was nearing the Distant Signal, that it was being driven on the same line as his train. He immediately exhibited a red hand signal to the train. As it failed to slow down, he jumped off to the left and shouted to attract the attention of the Motorman. It, however, did not stop and collided with the rear of his train at about 07.05 hours at speed of about 40 m/h. He then proceeded to the Station where he informed the Assistant Station Master of the accident. It was a cloudy day with rain drops falling off and on.

15. **Guard S. C. Moulik of C. 166 Down** stated that his train left Burdwan at 06.55 hours, 3 minutes late for issuing of requisite OPTs due to total interruption of communications between Burdwan and Gangpur, which were duly acknowledged by him before serving them to the Motorman by the Station Porter. The train picked up speed of 10 m/h by the time it passed the Advanced Starter of Burdwan and thereafter about 15 m/h which was maintained upto short of the Down Distant of Gangpur, whereat it was further accelerated and collided with the rear of a stationary train at about 20 to 25 m/h at 06.07 hours. When it became apparent that the train was being further accelerated approaching the Down distant signal, he sounded Bell Code asking the Motorman to stop it but he did not respond. As he was about to apply the emergency brake, the collision occurred when he felt a severe jerk which threw him down on the floor. On alighting the train, he protected both the Down lines,

To questions the witness replied: Although he was aware that the Motorman was running at higher speed than what was specified in the Caution Order viz. 15 Km/h, he did not pull it up as he was guided by the speed restriction mentioned in the Block Working Manual viz. 25 Km/h. On further questioning he admitted that the speed shown in the Caution Order should have been adhered to; the needle of Speedometer in his cab was fluctuating and he took it that it was out of order; the time interval between the speeding up of the train approaching the Down distant of Gangpur and the actual collision was about 1 minute; when he met the Motorman before leaving Burdwan, he did not complain of any ill-health; the air-brake pressure was 65 lbs. per sq. inch before starting from Burdwan; he did exchange signal with the Motorman while leaving Burdwan; approximately 150 passengers were on the train; only once the hooter was sounded while passing the Advanced Starter of Burdwan.

NOTE1.— The Motorman, who drove this rake to Burdwan from Howrah the previous evening, testified that the speedometer was in order. His statement was fully substantiated when the Unit was tested by me.

16. **Platform Assistant Yard Master S. R. Bhowmick of Burdwan** came on duty at zero hour on 18-8-68. At about 00.20 hours, the East Cabin of his Station informed him of total interruption of communications. On being satisfied that his statement was correct, he immediately advised the Station Master, Traffic Inspector (M) and the Block Signal Inspector, Burdwan. In consultation with the former, who came to the Station, it was decided to operate train services under the rules and Regulations of working trains on Double line section during total interruption of communications. Thus EC. 281 Down was the 12th Down train to leave the Station by the Down Howrah Burdwan Chord line at 06.39 hours and C. 166 Down was the 13th train to follow it at 06.59 hours by the same line. He personally ensured, as he did with others, that the Motorman of C. 166 Down received all requisite OPTs, the counterfoils of which bear his signature.

17. **Assistant Station Master L. M. Das of Gangpur** stated that as he was unable to contact Burdwan by any means of communication at 00.15 hours on 18-8-68, he then started passing all Up trains in accordance with the relevant Rules and Regulations. All Down trains were stopped at the respective Home signal which was taken 'OFF' only after hearing trains whistle. E. C. 281 Down was no exception. The Home signal for it was taken 'OFF' at about 06.59 or 07.00 hours. Before the arrival of the Guard of EC. 281 Down Goods train at the Station, it was learnt from the Station Porter that traction current was off. This led him to think that on account of this the Goods train was not proceeding in spite of his having cleared the signals for it. The news of the accident was first given to him by the Guard of the Goods train at about 07.15 hours.

Even when confronted with the Driver of E. C. 281 Down and the Motorman of M. 132 Down Local train he maintained that the Approach signals for the trains were cleared only after the trains had stopped at the respective Home.

18. **Traffic Inspector (M) P. B. Sarkar of Burdwan** stated that, reaching Gangpur by 320 Down at 02.25 hours on 18-8-68, he started supervising the work of Assistant Station Master on duty. He heard the Driver of E. C. 281 Down whistling. On his inquiry, the Assistant Station Master assured him that Reception Signals for the train have been cleared at 06.59 hours. In his opinion they were not cleared before stoppage of the train, although the possibility of their being cleared before stoppage of some trains and sounding whistle could not altogether be ruled out. When the Guard of the Goods train gave the news of the collision at 07.15 hours, he promptly relayed the information to the Howrah Control through the Traction Power Circuit within 3 minutes. He then deputed the Signal Interlocking Maintainer who was attending to telephones at the Station to go to Burdwan by Road for arranging medical aid relief.

19. **Motorman Pritam Singh of M 145 Up** drove the EMU train comprising units No. 41 & 49, which were involved in the accident on the following morning, from Howrah on 17-8-68 reaching Burdwan at 19.53 hours. No trouble was experienced whatsoever on the run and no repairs were booked by him as none was required. The brakes and the speedometer functioned perfectly well.

On the 18th morning, while working M. 132 Down EMU train to Howrah, he left Burdwan at 05.25 hours with requisite OPTs. When he had just brought his train to a stop at Gangpur Down Main Home signal, it was cleared for him before he was able to sound four long whistles. Although it was cloudy and not raining, the visibility was good on the run.

20. **Off-duty Driver, J. Mahato of Burdwan** was travelling in the rear compartment of the second coach of C. 166 Down. The train had picked up speed of 30 to 35 m/h by the time it reached the East Outer Cabin, Burdwan and was maintained throughout until the collision. He and other co-passengers felt severe jerk which he thought was as a result of derailment of the train. On alighting the train he could realise that a collision had occurred with the rear of a stationary Goods train. It was cloudy day with occasional rain drops. The visibility was fair and in his estimation the stationary Goods train could have been spotted by a train following on the same line from a distance of 1,200 ft. The Gangpur H. B. Chord line Home signal was at 'Yellow' when it was seen after the accident. Just before leaving Burdwan, he met the Motorman who seemed to be cheerful. He was not aware whether the train whistled on the way or the brakes were applied. He did not record the time of accident.

21. **Electrical Foreman B. N. Mukherjee of Howrah Car Shed**, stated that, on reaching the site at 14.00 hours, he examined the rake of the colliding train No. C. 166 Down. He observed that the brake-van of EC. 281 Down Goods train had telescoped into the leading end of the first coach of the Local train, smashing its cab and a portion of the IIIrd Class Compartment in rear of it. The Motorman's switch box was pushed further inside the coach from its original position, breaking it and damaging all the cabling and pneumatic piping. The damaged cabling resulted in short circuit which caused all miniature circuit breakers to trip. Guard's Switch box, which had broken, was missing. All pressure gauges were smashed. The hand brake gear wheel was broken and so was the case with fuse panels and miniature circuit breakers. The sole bars of the underframe at the leading end were bent, the sag being 1'-0" at the fore end. All other under gear fittings were intact. All cocks for the pneumatic circuit were in normal position and the reverser in fore gear position.

The Master Controller was in 'off' position; the Master Controller handle in released position and the Dead-man in applied position, indicating thereby that the Motorman was driving the EMU train in forward direction but had switched off the traction power just before the accident. The Brake Cylinder gauge, although broken, had one needle stuck in position showing the pressure of 50 lbs. per sq. inch. It means that the brake was applied at least 5 to 6 seconds before the impact.

The brake isolating valve switch was in 'off' position and the isolating key which might have moved out of position as a result of impact was missing and could not be traced.

All the switches in Driver's Switch box and the driving key were in 'ON' position i.e. in normal position. All the isolating cocks were in normal position. The emergency brake handle in Guard's cab was not in applied position, implying thereby that it had not been applied by the Guard.

From the observation, he concluded that cent per cent brake power was available. The brake blocks on wheels were found released due to leakage of air through brake pipes, which is nothing unusual as judged from the results of normal brake application which gets released within 40 to 45 minutes for the same reason.

The Pantographs of both units were in lowered position, probably due to loss of air pressure.

There was no damage to other 5 coaches.

22. **Electrical Chorman T. N. Banerjee, of Burdwan** stated that, coming on duty at zero hour, he prepared the rake of C. 166 in early hours of 18th August when he carried out all prescribed checks which were subsequently repeated by the Motorman in his presence before taking it over in perfect working order. No repair was booked by the Motorman of M. 145 Up who last drove it from Howrah on the previous evening.

VI. TESTS AND OBSERVATIONS

23. (a) Tests were conducted on 23rd August 1968 by an EMU rake of similar composition as that involved in the accident in the presence of Divisional Superintendent and other concerned Divisional Officers of the Howrah Division. For the purpose, a Goods train was stabled outside the Down H. B. C. Home signal of Gangpur with the Brake-van at the probable point of collision.

From the cab of the Test train, which was driven from Burdwan on the same line as that of Goods train, the tail end was first visible from a range 3140 ft. but it was not possible to make out from here whether it was on the Down Main or Down H. B. C. There was no doubt about this from a range of 2095 ft. The visibility was not impaired once the tail end was sighted.

(b) The braking test revealed that an EMU train from 40 m/h could be brought to a stop in 453' by application of emergency brakes.

(c) It took nearly 20 minutes for an EMU train at 10 to 12 m/h to clear the distance between Burdwan and the Gangpur Down Home Signal.

VII. DISCUSSION

24. Time of the Accident and Visibility condition.—The Guard and the Driver of EC.281 Down Goods train noted down the time of accident as 07.05 hours—paras 13 and 14. However the Guard of the colliding train had recorded this as 07.08 hours in his rough journal book but subsequently corrected it to 07.07 hours—para 15 which does not tally with others, possibly his watch might have been faster by 2 minutes. As stated earlier, the accident caused earth fault which resulted in tripping of circuit breaker, the indication of which was received in the Howrah remote Control at 07.05 hours. It is to be accepted that the accident occurred at 07.05 hours.

Testimonies show beyond doubt that the accident occurred in cloudy weather with occasional drizzle but the visibility was good—paras 13, 14 and 19.

25. Speed at collision.—(a) The Guard of the colliding train deposed that the train picked up speed of 15 m/h soon after leaving Burdwan which was maintained until approaching the Down Distant of Gangpur when it was further accelerated and collided with the rear of the Goods train at about 20 to 25 m/h—para 15. The Guard of the Goods train, who jumped off the brake-van in time, has assessed this to be 40 m/h—para 14. The off-duty Driver J. Mahato of Burdwan, who was travelling in the second coach of the EMU train, stated that the train picked up 30 to 35 m/h speed by the time it reached the Burdwan East Outer Cabin and it was maintained until the collision—para 20.

(b) By the colliding train Guard's timings, the train took 12 minutes to cover the distance between Burdwan and the point of collision which was 1068 ft. in advance of the Down Distant of Gangpur. As established by the Test, it should not have been less than 20 minutes at 10 to 12 m/h—para 23(c). The time of train passing the Burdwan East Cabin as recorded there was 06.59 hours and the collision occurred at 07.05 hours. Even assuming that it took about 2 minutes from start to reach the East Cabin, the running time was 7 minutes, same as the Time Table running time at booked speed of 45 m/h (72 Km/h).

Considering the evidence and effect of the collision—para 9, I hold the view that the speed at collision was about 35 m/h.

26. The C. 166 Down Burdwan Local.—(a) The rakes of the EMU train, before working as C. 166 Down on the morning of 18-8-68, had worked as M. 145 Up from Howrah to Burdwan on the previous evening. The Motorman, who drove it to Burdwan, testified it to be in perfect order, brakes and speedometer functioned well and no repairs were booked by him—para 19.

(b) The Electrical Chageman, Burdwan, who prepared the rake in his morning shift duty stated that the Motorman of C. 166 Down, on being satisfied himself after carrying out all prescribed checks, took over charge of the rake from him—para 22.

(c) The Electrical Foreman of Howrah Car Shed, who examined the rake after the accident, concluded from his observations that cent per cent brake power was available at collision—para 21.

(d) The rake, excluding the first damaged coach, was driven in my presence and I found the brakes functioned efficiently and the speedometer in working order.

There could be little doubt that the condition of the Local train was satisfactory and there was no defect which could have impaired its road-worthiness prior to the collision.

27. (a) The evidence of the Guard of C. 166 Down and that of the Goods train EC. 281 and the off-duty Driver travelling by the Local train amply leads one to conclude that the train No. C. 166 Down was driven at excessive speed and as assessed by me it was not less than 35 m/h at collision. This was very much higher than what was stipulated in the Caution Order served to the Motorman viz. 15 Km/h.

(b) The trials on 23rd August in company with the Divisional Superintendent and other concerned Divisional Officers established beyond doubt that the tail end of No. EC. 281 Down Goods would have been clearly observed from a point of 3,140 ft. in rear of it and from a range 2095 ft. it was possible to make out on which line it was standing.

(c) The braking distance of a 6-coach EMU train from a speed of 40 m/h as established at trial was 453'.

There could be no doubt that the Motorman had ample range to stop the train, even at the speed of 35 m/h at which it was driven, clear of the obstruction had he been vigilant.

28. From the foregoing it is evident that the Motorman of C. 166 Down failed to observe the speed of 15 Km/h that was mentioned in the Caution Order served on him and was hardly vigilant and did not exercise adequate care thus contravening the provisions of General Rules No. 89(b), 122 and 163(a) (i) reproduced below:

"G. R. 89(b)—The Driver shall regulate and control the running of his train as accurately as possible, according to the Working Time Table, so as to avoid either excessive speed or loss of time; he shall not make up between any two stations more time than is allowed in this behalf by special instructions and shall observe all temporary speed restrictions.

G. R. 122—Driver and Fireman to keep a good look-out—Every Driver shall keep a good look-out while the train is in motion, and every Fireman shall also do so when he is not necessarily otherwise engaged.

G. R. 163—Duty for securing safety.—(a) Every railway servant shall—

(i) see that every exertion is made for ensuring the safety of the public."

29. G. R. No. 121 (reproduced below) lays down that Guard of the train should keep a good look-out during the journey satisfying himself that the train is proceeding in safe and proper manner. G. R. No. 126 (reproduced below) lays down that if a Guard sees reason to apprehend danger or consider it necessary to stop a train he shall do his best endeavours to attract the attention of the Driver and if a train is fitted with a continuous brake, he may in case of emergency, apply such brake to stop the train.

The Guard of No. C. 166 Down Local, by his own admission, was aware that the speed of train was much in excess of what was stipulated in the Caution Order right from Burdwan and that it was further accelerated approaching the Down Distant of Gangpur. He became aware of the emergency too late as he gave Bell Signal Code to the Motorman to stop the train only a minute before the collision but failed to apply, even at that late stage, the emergency brake. Had he acted, when he first became aware that the train was being driven at excessive speed, he might have prevented the accident altogether. No doubt the accident was caused by the Motorman and full responsibility lies on him but the Guard must bear some blame for his failure in not taking timely action to avert it.

"G. R. 121—Guard to keep good look out.—During the journey including halts at stations, every Guard shall keep a good look-out and satisfy himself from time to time that the tail board and brake-van lamps are in position and that all brake-van lamps if required, are burning brightly, that the train is complete in every respect and is proceeding in safe and proper manner.

NOE,— The term 'brake-van lamp' includes 'tail Lamp,'

G. R. 126—Attracting attention of Driver.—(a) If any Guard sees reason to apprehend danger, or considers it necessary for any reason to stop the train, he shall use his best endeavours to attract the attention of the Driver.

(b) In the absence of other means of communication with the engine, a Guard desiring to attract the Driver's attention shall apply his handbrake sharply and as suddenly release it

(c) When the attention of the Driver has been attracted, the necessary danger signal shall be shown.

(d) If the train is fitted with a continuous brake the Guard may in case of emergency, apply such brake to stop the train."

30. Sub-rule 6 of Rule No. 34 of the Block Working Manual—para 12 of the Eastern Railway states that the first Stop signal shall be taken 'OFF' only after the train has been brought to a stand outside it. Sub-rule 9 enjoins upon the Driver to bring his train to a stop outside the first Stop signal and sound four long whistles. In compliance with the said rules, the Driver of E. C. 281 Down Goods pulled up the train at Home signal although it was taken 'OFF' in advance of his arrival and sounded 4 long whistles. The Motorman of 132 Down EMU, which had preceded it earlier, observed the Home signal being cleared for his train as he had come to a stop, but before he was able to sound 4 long whistles. The Assistant Station Master of Gangpur, even when confronted with the above 2 witnesses, averred to have cleared the signal only after the trains had stopped. The Traffic Inspector, who was at Gangpur supervising the work, stated that signals were not cleared before stoppage of the trains but the possibility of their being taken 'OFF' in advance in some cases could not altogether be ruled out—para 18. If the Assistant Station Master had correctly observed the relevant rules I see no reason why the Driver of E. C. 281 Down should have sent his assistant to the station to ascertain the position. This leads me to believe that the Assistant Station Master was rather hasty in taking 'OFF' the Home signal.

The Distant is the permissive 'yellow' and its aspect is controlled automatically by the aspect of the relevant Home signal—para 11(c). Had the Home signal not been taken 'OFF' in advance for EC. 281 Down, the Distant would have displayed permissive single 'yellow' in which case the Motorman of the colliding train, who died in the accident, would probably have acted on that aspect and the collision may not have occurred.

The Assistant Station Master, therefore, is held responsible for breach of the prescribed rules governing the lowering of signals under special conditions of working during total failure of communications.

31. The Bamangachi Medical Van, last examined and oiled on 9-8-68, left Howrah within half an hour of its ordering. It developed hot axle on the way on account of the axle slipper plate missing and the frequent attention, which it required, considerably delayed its movement. The Record maintained by the Train Examiner showed that during the past 18 months regular schedules of repacking and oiling were strictly adhered to. In the opinion of the Train Examiner, the trouble might have been due to miscreants' activities as the Medical Van remains unguarded in the yard and I am inclined to agree with him. The Railway Administration should ensure, if necessary by daily examination or keeping a watch, that it is in a fully road-worthy condition at all times.

VIII. CONCLUSIONS AND REMARKS

32. The cause of the accident—On full consideration of the material, circumstantial and oral evidence, I have reached the conclusions stated below:

- (i) The collision occurred on 18th August, 1961, was the result of EMU train No. C.166 Down Burdwan Local being driven at excessive speed and without great caution and requisite care on Burdwan-Gangpur Block Section which it had entered during total failure of all communications, when EC. 281 Down Goods which had preceded it was still occupying it while waiting at the Down Home signal of Gangpur station.
- (ii) Full responsibility for the accident, lies on the Motorman of C. 166 Down, I. P. Singh, who failed to exercise due precaution as required by General Rules 89(b), 122, 163(a) (i) and printed instructions at the back of OPT/126A which was issued to him.
- (iii) The Guard of the EMU train, who was fully aware that the train was being driven at speed much in excess of what was shown in the Caution Order, failed to act in time, as required by General Rules No. 121 and 126, to stop it to avert the accident.

33. **Service Records of Motorman of C. 166 Down.** Sri I. P. Singh, who was 40 years of age, was originally recruited as Probationary Fireman Grade 'A' on 21-5-51. He was promoted as Driver 'C' grade on 21-11-62, which post he held upto the time of the accident. On completion of training for working EMU trains at Howrah Car Shed on 19-6-68, he was put incharge to work such trains on short links from 22-6-68 to 23-7-68. He was entrusted with long distance EMU trains upto Burdwan on and from 24-7-68. No punishment in connection with his train working duties was inflicted.

34. **Service records of Guard of C. 166 Down.** Sri S. C. Moulik, aged 36 years, was initially appointed as Guard Grade II on 21-1-45 but due to his unauthorised absence his service was considered terminated and was shown reappointed with effect from 15-3-46. His record is clean in regard to his train working duties.

35. **Relief Measures.**—Emergency calls were made without delay and they were met with prompt response. I am satisfied that the Medical aid at site was prompt and efficient. Relief Measures were satisfactory as could be expected in the circumstances.

Sd. (G. S. PANDOR)

CALCUTTA,
The 16-4-1969.

*Additional Commissioner of Railway Safety, North Eastern Circle,
Calcutta.*

Recommendations made by the Commission of Railway Safety in connection with the rear-end collision between EC 281 Down Goods train and C 166 Down Burdwan local (EMU) train at Gangpur station of Eastern Railway on 18th August, 1968.

To prevent hot axle developing to Medical Vans, it is recommended that all of them should gradually be provided with roller bearings.

It is desired that axle-boxes and undergear of Medical Vans should be attended to frequently to ensure their roadworthy condition at all times.

Railway board have remarked as under on the above noted recommendations: Instructions already exist that axle box and undergear parts of medical vans should be attended to frequently and these are being reiterated.

In regard to the change-over from plain bearings to roller bearings on medical vans, it is stated that this will lead to a complete change-over of the bogie and, therefore, it is not considered necessary to do so on the existing ones.
